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09/586,692	06/01/2000	Martin P. Debreczeny	LIFE-005(Client # LFS-95)	5779

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Please find below and/or attached an Office communication concerning this application or proceeding.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 9

Application Number: 09/586,692
Filing Date: June 01, 2000
Appellant(s): DEBRECZENY ET AL.

MAILED
MAR 10 2003
GROUP 2800

Frank P. Becking
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 23 December 2002.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the

pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellant's brief includes a statement that claims 1-28 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

4,999,010	Mattson et al	3-1991

Griffiths et al, "Fourier Transform Infrared Spectroscopy-chapter 8",Vol. 83 – 1986, pp- 284-310.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Rejections Under 35 U.S.C. § 102

Claims 1-10, 12, 13, and 21-28 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Mattson et al(4,999,010). This rejection is set forth in prior Office action, Paper No. 6.

With regard to claims 1-5 which stand or fall together; see table 1 for a comparison of the limitations of claim 1 with Mattson et al.

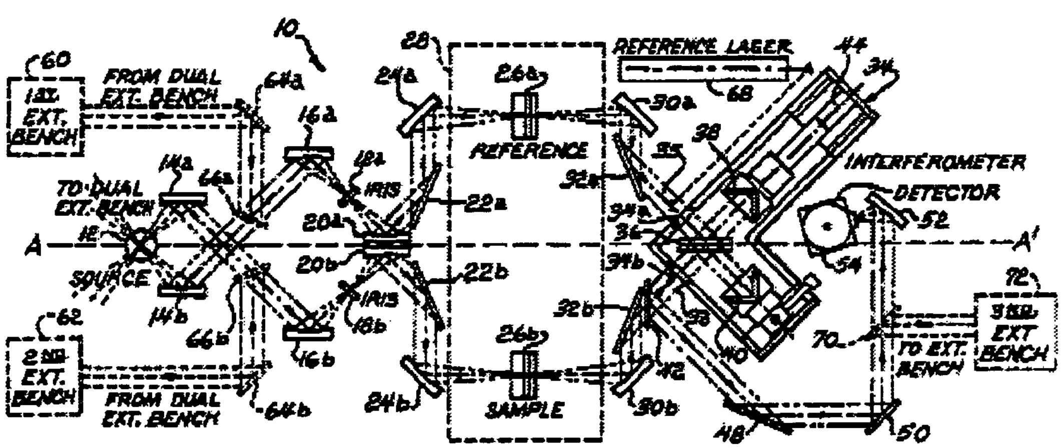

Table 1:

Claim 1 limitations:	Mattson et al (see figure 1 above)
providing a sample of low transmissivity	a sample is provided at 26b
producing sample and reference beams	sample(33) and reference(35) beams are produced
producing a null signal from the sample and reference beams	a null signal is produced by a Michelson interferometer(34)
deriving the presence of and analyte in the sample from said null signal	a null signal is detected at detector(54) indicative of the spectrum and thus the composition of the sample

A dual beam nulling interferometric spectrometer is not limited by the transmissivity of the sample and thus anticipates samples of the full range of transmissivity.

With regard to claims 6-20 which stand or fall together; see table 2 for a comparison of the limitations of claim 6 with Mattson et al.

Table 2

Claim 6 limitations	Mattson et al (see figure 1 above)
providing a sample of low transmissivity	a sample is provided at 26b
producing a sample beam and a reference beam from an infrared source	sample(33) and reference(35) beams are produced from infrared source(12)
producing a null signal from the sample and reference beams	a null signal is produced by a Michelson interferometer(34)
deriving the presence of and analyte in the sample from said null signal	a null signal is detected at detector(54) indicative of the spectrum and thus the composition of the sample
wherein each beam passes once through an interferometer	each beam passes through the Michelson interferometer(34)

As with claim 1 the dual beam nulling interferometric spectrometer is not limited by the transmissivity of the sample and thus anticipates samples of the full range of transmissivity.

With regard to claims 21-28 which stand or fall together; see table 3 for a comparison of the limitations of claim 21 with Mattson et al.

Table 3

Claim 21 limitations	Mattson et al (see figure 1 above)
means for producing a forward and backward beam from at least one infrared source	forward(14b,16b,20b,24b) and backward(14a,16a,20a,24a) beams are produced by infrared source(12)
means for producing a sample and reference beam	beams are passed through the sample(26b) and reference(26a)
means for producing a null signal from the sample and reference beams	the interferometer(34) produces the null signal which is detected by detector(54)

On an element by element basis the two dual beam interference spectrometers are the same. The transmissivity of the sample is a mere intended use and does not further limit the claim.

Claims 1-13, and 21-28 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Griffiths et al(Chapter 8-AO). This rejection is set forth in prior Office action, Paper No. 6.

With regard to claims 1-5 which stand or fall together; see table 4 for a comparison of the limitations of claim 1 with Griffiths et al.

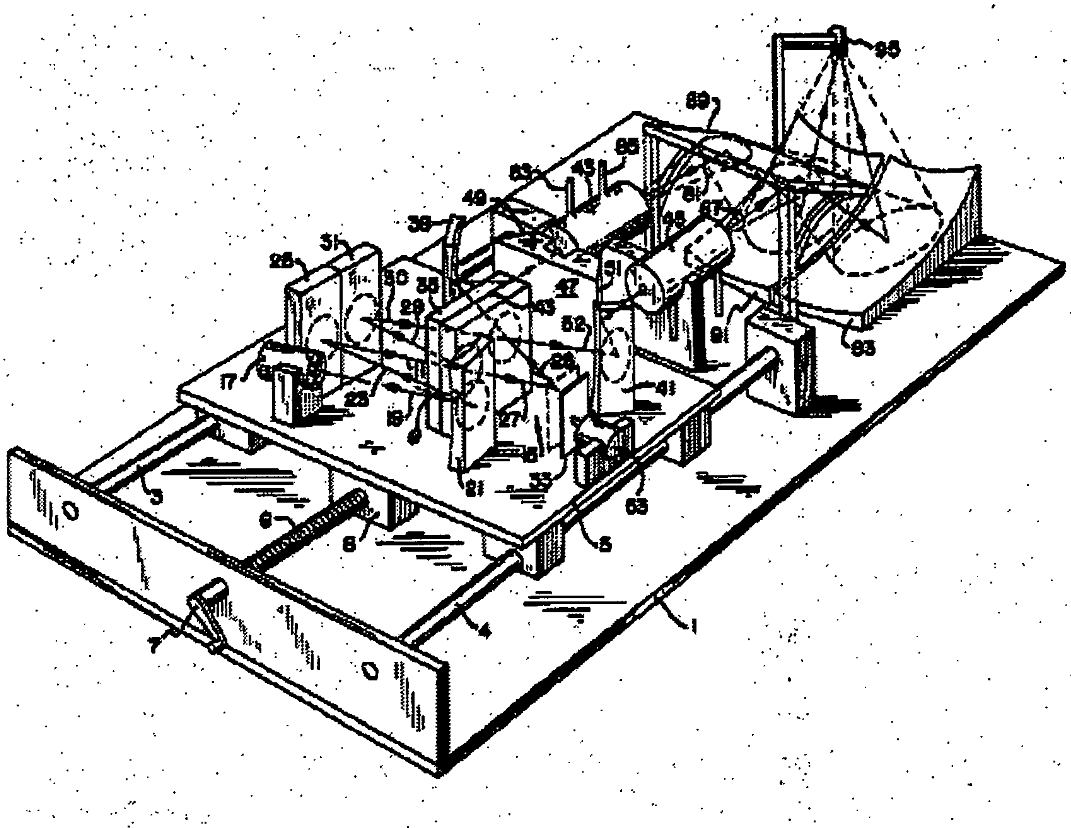

Table 4

Claim 1 limitations:	Griffiths et al (see figure 8.10 above)
providing a sample of low transmissivity	providing a sample in the sample cell(45)
producing sample and reference beams	producing a sample beam from the sample cell(45) and a reference beam from the reference cell(43)
producing a null signal from the sample and reference beams	producing a null signal from the sample and reference beams from the Michelson interferometer(5)
deriving the presence of and analyte in the sample from said null signal	an interferogram output is produced indicative of the concentration of materials in the sample cell

Note in figure 8.10 the sample and reference cells follow the interferometer. Griffiths teaches that the nulling spectrometer was developed for samples having low concentrations, i.e. high transmissivity, because of the poor signal-to-noise ratio

in single beam spectrometers. However nowhere does Griffiths limit the use of the dual beam spectrometer to low concentrations.

With regard to claims 6-20 which stand or fall together; see table 5 for a comparison of the limitations of claim 6 with Griffiths et al.

Table 5

Claim 6 limitations	Griffiths et al (see figure 8.10 above)
providing a sample of low transmissivity	providing a sample in the sample cell(45)
producing a sample beam and a reference beam from an infrared source	producing a sample beam from the sample cell(45) and a reference beam from the reference cell(43)
producing a null signal from the sample and reference beams	producing a null signal from the sample and reference beams from the Michelson interferometer(5)
deriving the presence of and analyte in the sample from said null signal	an interferogram output is produced indicative of the concentration of materials in the sample cell
wherein each beam passes once through an interferometer	each beam passes through the Michelson interferometer(5)

As with claim 1 the dual beam nulling interferometric spectrometer is not limited by the transmissivity of the sample and thus anticipates samples of the full range of transmissivity.

With regard to claims 21-28 which stand or fall together; see table 6 for a comparison of the limitations of claim 21 with Griffiths et al.

Table 6

Claim 21 limitations	Griffiths et al (see figure 8.10 above)
means for producing a forward and backward beam from at least one infrared source	the forward and backward beams are produced at the interferometer beam splitter from an IR source
means for producing a sample and reference beam	the beams are passed through the sample and reference cells
means for producing a null signal from the sample and reference beams	the beam are mixed at the infrared detector

On an element by element basis the two dual beam interference spectrometers are the same. The transmissivity of the sample is a mere intended use and does not further limit the claim.

Rejections Under 35 U.S.C. § 103

Claims 14-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Griffiths et al(Chapter 8-AO). This rejection is set forth in prior Office action, Paper No. 6.

Griffiths et al teach a plurality of different dual-beam Fourier transform spectrometers which includes both one and two sources, interferometers positioned before and after the sample and reference, and one or two detector arrangements.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to inspect any type of material sample and use the reference which will provide the best null in relation to the specific sample tested. The specific sample/reference would not have any effect on the apparatus or the method in which the apparatus is used.

(11) Response to arguments

Rejections Under 35 U.S.C. § 102

Applicant's arguments with regard to claims 1 and 6 is that neither Mattson et al or Griffiths et al specifically teach the use of the dual beam interference spectrometer for low transmissivity samples.

Both Mattson and Griffiths are silent on the transmissivity of the sample simply because so long as light can pass through the sample the dual beam interference spectrometer the concentration of the sample can be measured. Both Mattson and Griffiths teach that the dual beam interference spectrometer produces an interferogram with a dynamic range far greater than the spectrum of any sample

to be measured. While a low range of about one part in one hundred thousand is given, no upper range is given because higher the concentration, i.e. lower the transmissivity, the more of the light at the specific wavelengths of the spectrum are absorbed thus it is easier to detect the sample components.

Looking at equation $V_t(\delta)+V_r(\delta)=\int_0^{\infty} B(\nu)[1-\tau(\bar{\nu})]\exp(2\pi i\bar{\nu}\delta)d\bar{\nu}$-(8.16) which describes the null signal detected by the detector, the absorbance spectrum is $[1-\tau(\bar{\nu})]$. Griffiths page 299+. Clearly $[1-\tau(\bar{\nu})]$ would include all transmissivities both low and high. If light can pass through then $\tau(\bar{\nu})$ is less than 1 and the dual beam interference spectrometer would produce and output.

With regard to apparatus claim 21; applicant argues that since the claims are written in means-plus-function format and no specific teaching of low transmissivity is found Mattson or Griffiths the references co not anticipate claim 21.

Applicant's figure 2 is an element by element correspondence with figure 1 of Mattson shown above, while applicant's figure 3 has an element by element correspondence to Griffiths figure 8.10 a more complete version is shown above. Tables 3 and 6 above show that the means claimed in claim 21 are all taught explicitly by Mattson and Griffiths. The preamble merely contains an intended use of a low transmissivity sample in the prior art dual beam interference spectrometer.

Rejections Under 35 U.S.C. § 103

Applicant argues an "Obvious to Try" rationale or that no motivation to test the specific samples claimed is supplied for Griffiths.

The dual beam interference spectrometer is used to determine the concentration of various "analytes" in an unknown sample. Griffiths is silent on specific samples and analytes because it would have been obvious to the skilled

artisan to test for any analyte which has an absorbance spectrum within the the spectrum of the infrared source. The skilled artisan would not "try" a sample, the skilled artisan would know the absorbance spectrum of the analyte and would know that such an analyte can be detected using a dual beam interference spectrometer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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SAT
March 4, 2003

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